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COMPREHENSIVE STUDY TO UNDERSTAND LONGITUDINAL ERW SEAM FAILURES

Submitted by, Battelle in collaboration with
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The objective of the proposed project is to assist the PHMSA in favorably closing NTSB Recommendation P-09-1 arising from the Carmichael MS pipeline rupture involving an ERW seam, which directed that the PHMSA conduct a comprehensive study of ERW pipe properties and the means to assure that they do not fail in service. The work is anticipated to validate that periodic use of the current ERW seam integrity assessment methods (hydrostatic testing and in-line inspection using a crack-detection tool) are the best means to prevent ERW seam ruptures. The work will address the characteristics of ERW seams that make them susceptible to failure, and it will identify the factors the pipeline operators must consider in order to assure that their ERW pipelines are safe.

In this quarter, six case studies involving extensive, repeated hydrostatic testing to assure electric resistance welded (ERW) and flash-weld seam-integrity are analyzed and documented. These six cases represent 2,096 miles of pipelines in hazardous liquid service. The purpose of this study was to evaluate the effectiveness of hydrostatic testing as a means of assuring the integrity of ERW and flash-weld pipe seams. The effectiveness of hydrostatic testing is probably best demonstrated when defects that were enlarging in-service fail during the test. In these cases, the test failures can be considered prevented in-service failure.

We have collected 2,624 feet of problem pedigree pipe and had it shipped to Battelle for cleaning and assessment. In-the-ditch methods have been used to examine 1,180 feet. The challenge remains to test the samples in a timely fashion and get the program back on schedule.